

UNIVERSITY OF CALIFORNIA.

AGRICULTURAL, EXPERIMENT STATION.

BULLETIN NO. 61.

CV

Distribution of Seeds and Plants.

Owing to the lateness of the season it is deemed advisable to combine this year the distribution of seeds and that of plants, which have for the last two years been made by separate announcements. We have retained in the lists some growths which have done well on the University Experimental Grounds, and have been given good reports by those to whom we have sent them for trial, in order that the experiments might be still more widely extended to secure a wider knowledge of the adaptation of the plants to California conditions. A number of new growths are offered this year which have set up a claim to value in this State. As has been described in previous bulletins, this distribution is made for the purpose of ascertaining the adaptation and practical value of the several kinds, in the different climates and soils of the State; and persons receiving them are requested to report results, whether success or failure, and if the latter, from what apparent causes.

Terms.—As there is no appropriation available to meet the expenses of packing and postage, applicants are requested to send the amounts specified in connection with each description below. If they desire seeds sent by express, applicants need not send the amounts specified for postage, but all orders for seeds by express must be accompanied by a remittance of 10 cents to pay for packing. Applications may be made for one or more kinds of seeds. In case any kind of seed becomes exhausted, the money sent will be returned unless a second choice is mentioned by the sender.

Plants will be forwarded by express (unless specially otherwise requested), in lots consisting of the number hereinafter mentioned for each kind, on remittance of 25 cents for each lot of plants and 10 cents additional for each additional lot to pay expenses of packing, etc. Postal notes, payable at the Berkeley postoffice, are requested to be sent in lieu of stamps whenever practicable. Any surplus left after filling orders as far as possible will be returned to the senders, deducting letter postage.

Wheats Resisting the Hessian Fly.

The distribution of cereals this year is restricted to three varieties of wheat, which proved resistant to the attack of the Hessian fly (*Cecidomyia destructor*) in our experiments during the past season. An outline of these experiments was given in Bulletin No. 58 of the University Experiment Station, and a full report will be found in the forthcoming report of the College of Agriculture for 1886. Out of 100

varieties of wheat sown there were but six in which no trace of the fly was found, and of these we have sufficient seed of three varieties for distribution. It is desired to send these wheats only to the localities where the fly is known to exist, because we want the experience of experimenters in other infested localities to compare with our own observations. The varieties offered are "Volo," "Bearded Missoyer" and "Greek Atlantic." These wheats all have solid stems, the straw being filled with pith. They all belong to the *hard* wheat type (*Triticum durum*), having rather long-pointed grains, almost translucent, and a horny consistency, owing to their richness in gluten, though when grown in this State they rapidly change in this respect and become starchy. These wheats are chiefly grown in the countries bordering upon the Mediterranean and the Black seas. They do not succeed in the north of Europe, nor are they of much account even in the middle of France. They are, however, quite hardy and productive in California, and with the change in their character noted above, promise to be of considerable value. Samples of the grain were submitted to experts in milling and shipping wheats and pronounced good, merchantable wheat, and salable in the market at about two and one-half cents per cental less than No. 1 shipping wheat. As they are naturally of strong growth and productive, it is expected that they will be found valuable in those localities where other varieties are rendered unprofitable because of the Hessian fly. Applicants will each be furnished with one pound of each of the three varieties, or a single pound of either variety. Send 20 cents for each pound ordered, if to be sent by mail.

Textile Plants.

The progress which inventors seem to be making in devices for extracting the fiber from various textile plants promises to make such growths profitable in this State. While we do not, of course, guarantee the success of the machines which are now becoming prominent, nor promise that a market is yet open for the sale of crops which will yield fiber, we deem the outlook favorable enough to warrant general experiment with the plants to ascertain the adaptability of certain localities of the State to them, so that those who may in the future deem such crops worthy their attention may have full data of their growth and probable yield. It is probably generally understood that the secret of profit in these crops lies in the solution of the problem of extracting the fiber by mechanical means so that the product may profitably compete with that produced by the cheap labor of Asia and Europe. For ramie fiber there is a steady demand by the English manufacturers if the fiber is extracted to suit their wants. For flax fiber, we are assured by local manufactur-

ers that there will be a demand here for all the properly prepared fiber, as only the lack of the material prevents a large local manufacture of twines, etc.

Ramie.—We have grown from imported seed a stock of plants of *Boehmeria candicans* which is, however, said by experts to be inferior to the *Boehmeria tenacissima*, although the fiber of the *candicans* is of value in making coarser fabrics. The tests of this species will probably serve to determine the conditions favorable or otherwise for the growth of the other. Most satisfactory results have been reported with plants sent to growers in the upper San Joaquin valley, and experience generally seems to indicate successful growth of the plant in a great variety of soils and climates. Ten small plants will be sent to each applicant; 25 cents per lot.

Fiber Flax.—We have gathered a good quantity of seed of four European varieties of flax (*Linum usitatissimum*) which are grown on the continent especially for their fiber. They grow about three times as tall as the variety commonly grown in this State for the seed. When sown in February in Berkeley, a good growth has always been attained without irrigation, and fair results have been secured by sowing as late as April. The following varieties are offered in 1-lb. sacks; 20 cents each if forwarded by mail: "White Flowering," from France; "Royal," from Germany; "Russian," from Pskoff; and "Yellow Seeded."

Esparto Grass.—*Stipa tenacissima*, the grass so extensively used in the Mediterranean countries for cordage, baskets, etc., and lately exported in large quantities as a material for paper-making. It grows naturally on sandy beaches, within reach of salt water, but will doubtless be found adapted to many saline and alkaline lands now unreclaimed or occupied by the common tule. It should be thoroughly tested in sandy coast lands southward of the bay, and in South California. Ten plants to each lot; 25c. per lot by express.

New Zealand Flax, so useful to gardeners and vineyardists for the purpose of tying with the ribbons into which the leaves readily split, and which are exceedingly strong, is again offered for distribution. Reports received from the interior of the State point strongly to the conclusion that the plant is unadapted to the hot interior valleys. From all coast regions the reports are good. Although fond of moisture, it is not a marsh plant and will not succeed in a swamp. Two plants to the lot; 25c. per lot by express.

Forage Plants.

The forthcoming report of the College of Agriculture for 1886 will contain a detailed account of the results attained with a number of plants sent out for trial to different parts of the State. The following are offered for further trial:

Schrader's Brome Grass (*Bromus Schraderii* or *unioides*): Valued in Australia as resisting drought, and in Texas as giving good feed in winter and early spring. We have received reports from many in this State to whom we sent seeds two years ago, declaring the grass a success. It is among the first grasses to start,

grows vigorously, and matures an abundance of heavy seeds almost like oats. Its seed stems being two or three feet high, and leafy, it can be used for either hay or pasture. Four-ounce packages by mail, 5c. each.

Milium multiflorum: A perennial millet grass, growing about two feet high with seed stems two feet higher. It is a plant of slow development, but strong. Owing to the fineness of the seed, it should be planted very carefully and covered lightly. It should not be pastured the first year, as it is easily pulled up by the roots. After being well established, if grazed down, there is an abundant growth of fine leaves, which resist winter frosts to a remarkable degree. We have had favorable reports from the plants from different parts of the State, although some experimenters have complained of its failure. This is perhaps owing to the fact that it is hard to start, and because the season was unfavorable. Two ounce packages by mail, 3c. each.

Japan Clover (*Lespedeza striata*), a plant which is highly commended for drought-resisting properties in some of the Southern States. We have but a small quantity of seed, which will be sent in 1-oz packages; by mail, two cents each.

Various Trees.

Kikar.—We have grown from seed imported from India a few hundred plants of the Kikar or gum-arabic (*Acacia Arabica*). This tree is reported by the Director of the Department of Agriculture, at Cawnpore, India, as "unable to withstand frost; will do well on heavy soil, and thrives even on gravelly land. The gum has commercial value and the wood is used in making handles of tools and heavy wagons. The trees should be planted 40 feet apart, or afterward thinned out to that distance." This tree should be tried in the thermal belts and milder parts of the State. Lots of five trees will be sent to each applicant; 25 cents per lot by express.

Black Wattle (*Acacia decurrens*).—Reports of trees sent out in previous years are very favorable. The black wattle is shown to be fully adapted to the coast region of the State from San Francisco southward, and even in many interior points. It promises to be of much value for fuel, as well as the source of bark for tanning. The tree is a rapid grower, and the bark is usually stripped in its eighth to tenth year, when the tree is 30 to 40 feet high. Does well on heavy as well as on light soils, provided they are deep. We send seed in two-oz. packages, five cents each by mail. A few young trees can be furnished in lots of five to each applicant; 25 cents per lot by express.

The seed of the black wattle is hard to start, and may lie dormant a long period. We insert the method which Mr. K. McLennan, foreman of the University Agricultural Grounds, finds to yield good results with seed of the black wattle and with other hard leguminous seeds, like the various species of *acacia*, the carob, locust, etc.:

Prepare the beds or boxes and fill with nice sandy loam. Tie the seeds in a piece of cloth or a little bag and put them into a can of boiling water. Ex-

amine them often, and when they become soft and swollen they should be taken out and sown immediately, covering the seeds up, if in boxes, one-fourth of an inch; in outside beds three-eighths of an inch. Care should be taken not to allow the seeds to become dry during germination. If they are exposed to the winter rains, cover lightly with straw; remove the straw when they are well sprouted. After the seedlings are furnished with the first or second set of leaves they should be thinned and transplanted at a distance of three inches apart. This gives a chance to cut them out separately and leaving a little ball of earth to each whenever it is desirable to plant them out in their permanent places.

Olives.—We have a small number of olive trees of the "Nevadillo," a medium-sized olive of oval shape, ripening very early, and the Manzanillo, a rather large olive of more rounded shape, also of early maturity. These varieties were secured through Mr. Pohnedorf's importation. We can send one tree of each variety to each applicant; 25 cents for each pair by express.

Guavas.—A limited distribution can also be made of three guavas, *Psidium pomiferum*, *P. Cattleyanum* and *P. aromaticum*. The first named is the "pear-shaped guava" which we have sent out before and which is reported as doing very well in sheltered places in Southern California, and a desirable fruit. The second is the more hardy "strawberry guava," and which promises to succeed wherever the orange thrives. The third is a species from Guiana. As the adaptation of the varieties is quite well defined we will select according to location of applicant; three plants to each 25 cents per lot by express.

Miscellaneous.

Insect Powder Plants.—As there seems a continued desire for small packets of these seeds for trial, we still offer *Pyrethrum cinerariæfolium* and *P. roseum*, the Dalmatian and Persian insect powder plants. The former is the one most to be recommended as an insecticide, while the latter is quite ornamental, having flowers resembling single chrysanthemums, of four or five different colors. The seed should be sown in boxes in light, porous soil, and kept shaded,

but in a warm place and moist. Under favorable circumstances the seed will germinate in two or three weeks, and the plants, when of sufficient size to be handled, should be set out like cabbage plants. We can furnish the seed in one-oz. packages, two cents.

Quinoa: Chenopodium quinoa.—Of this plant we have two varieties, the seed of one from Germany and the other from Peru. The seed is a common article of food in the high plateau and mountain districts of Chile and Peru. Unfortunately it is grievously infested by the leaf-mining larva of a fly which interferes with its prospects in this region at least. We would like to have it tried in other parts of the State to determine its growth and value. Seed will be sent in two-oz. packages, five cents each by mail.

Bamboos.—A number of varieties of bamboo are now attainable in quantities to suit from nurserymen and importers. We have a collection of varieties which are growing well in the Garden of Economic Plants, but we have only the *Arundinaria falcata* for distribution. A few can be furnished single plants of this species; 25 cents each by express.

Kaffir Corn.—A variety of dhoura, or Egyptian corn, introduced by Dr. J. H. Watkins, of Palmetto, Georgia. It differs from the "Egyptian corn" grown in this State in bearing upright heads and in somewhat different characteristics of growth, as will be described in the forthcoming report of the College of Agriculture. The grain much resembles the White variety grown in this State. The plant has matured seed in Berkeley, which the Sorghum family does not usually do; the grain is, however, much inferior to that which may be expected in the interior of the State. We would like to have this variety tried by those who are growing Egyptian corn profitably. Seed will be sent in 2-oz. packages; 5 cents each by mail.

A bulletin announcing a distribution of cutting scions, etc., will be made next week. All applications should be addressed to

E. W. HILGARD,
Berkeley, Cal.

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